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ABSTRACT

Four male and five female Negro children (ranging in age from 5 to 9 years) served in an experimental comparison of the discriminative control exerted by sex and race aspects of other children. A baseline was established in which color photoslides of a Negro girl and a Caucasian boy differentially controlled responding on two push buttons. Responses during test probes picturing children from each race-sex grouping indicated predominant control by the stimulus dimension of sex. Six of the subjects were then reinforced for differentially responding to photoslides of Negro and Caucasian children. During subsequent training, photoslides of new individuals were introduced. Responses during test probes which followed each of these phases showed no generalization along a stimulus dimension of race. Effects of racial stimulus class labeling upon generalization were studied in a final phase following a multiple baseline design across subjects. It was found that for four subjects a verbal stimulus class labeling requirement, when paired with differential reinforcement for button-pushing, was sufficient to shift control to a dimension of race. (Author)

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STIMULUS GENERALIZATION ACROSS INDIVIDUALS ALONG DIMENSIONS OF SEX AND RACE: SOME FINDINGS WITH CHILDREN FROM AN ALL-NEGRO NEIGHBORHOOD

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INTRODUCTION

An increasing amount of social, political, and economic attention has recently been turned to problems related basically to racial differences across people. A sampling of investigations into racial "attitudes" (Gregor and McPherson, 1966; Horowitz, 1936; Hovland and Sherif, 1952; Likert, 1932; and Vidulich and Krevanick, 1966) "stereotypes" (Sheikh, 1965) and childhood "prejudice" (Epstein and Komorita, 1966; Summers and Hammonds, 1966; and Tabachnik, 1962) offers some idea of the nature of the attention which behavioral scientists have given racial phenomena. Generally these studies have made it their objective to seek out statistically significant correlations between subject variables (age, race, social class, sex, etc.) and the occurrence of discriminative behaviors which are variously defined and measured. Direct cross-study comparisons are often precluded by methodological differences.

It is possible to distinguish between racial studies which set out to measure differences in response topographies and those whose purpose is to analyze the process of stimulus control. The present study was chiefly concerned with data obtained in this latter type of research.

The "attitude," "stereotype," and "prejudice" investigations listed above fit nicely into the category of studies which are response directed. Investigations of "racial discrimination," "racial awareness," and "racial recognition," on the other hand, comprise the alternative category of studies which are directed at describing stimulus control.

Most of the racial studies falling into the second category have been concerned with specifying the age at which responses under the control of racial stimuli first appear. Among the methods of stimulus presentation have been oddity choice tasks (Stevenon and Stewart, 1958), picture-story interviews, and picture puzzles (Renninger and Williams, 1966), projective doll-play interviews (Ammons, 1950), and naturalistic observations (Goodman, 1952). As Renninger and Williams (1966) noted, results appear to be dependent not only upon the choice of methodology, but upon the selection of dependent variables (verbal "preferences," racial naming, identification, pointing, etc.), as well.

Nevertheless, there is fairly widespread agreement across investigations of racial awareness with preschoolers that children as young as two or three years do make discriminations on the basis of the racial characteristics of Negroes and Caucasians in their environment, and that the frequency of such discriminations increases with chronological age (Ammons, 1950; Clark and Clark, 1939; Goodman, 1952; Horowitz, 1939; Landreth and Johnson, 1953; and Morland, 1958). Little is known, though, regarding the degree of stimulus control exercised by racial aspects of other people in situations which permit discrimination along a variety of accompanying physical dimensions (sex, facial expression, dress, etc.). In addition, no procedures have been reported for training discriminations under the control of one specific dimension of that complex stimulus which is called "another person".

In her research with preschoolers Goodman (1952) noted that "The tendency to see the classificatory features is stronger . . . when the child is looking at a representation than when he is looking at real people. The view is less obstructed by personality." Most naturalistic observations and analyses of the effects of racial variables in live child-to-child interactions are restrained by the requirement to demonstrate that the stimulus controlling a specific behavior is, in fact, a racial one. The difficulty in making such a demonstration is primarily due to the fact that children in natural settings are doing things. And numerous problems are confronted in attempting to separate the effects of behaviors emitted by other children (much less the consequences of those behaviors) from the effects of whatever features combine to form non-behavioral racial stimulus classes.

Stevenson and Stewart (1958) have avoided the problems imposed by behaviors possibly functioning as discriminative stimuli. In one phase of a larger study they were interested in assessing racial awareness in three- to seven-year-old Negro and Caucasian children. Twenty cards were presented in unsystematic order to each subject. Eight of these cards contained pictures of three

objects, e.g., two chairs and a table. The remaining "race" cards contained line drawings of heads of three children, two of which were of the same race, and two of which were of the same sex, e.g., a Negro boy, a Negro girl, and a Caucasian girl. The subjects' task upon presentation of each card, was to choose the object which was different from the other two. The authors found that at all age levels, the average number of choices by sex was greater than those by race. Secondly, they noted that while there was no tendency for the average number of race choices to increase, the average number of choices by sex did increase with subject age. Stevenson and Stewart (1958) were able to draw such conclusions, because they had adequately controlled the dimensions along which the stimuli varied. Their study suggests that the task of functionally specifying stimulus classes and dimensions can be simplified in the laboratory by analyzing the discriminative stimulus effects of behaving and non-behaving human beings independently.

"Probe" techniques found suitable for analyzing stimulus control with animals (Guttman and Kalish, 1956, Honig and Day, 1962; and Jenkins and Harrison, 1960) and with humans (Cross and Lane, 1962; Lane and Curran, 1963; and Risley, 1964) were applied in the present study to determine whether a stimulus class of race or sex predominates in the control of discriminative behaviors emitted by Negro children. The general set of procedures has already been utilized in answering a very similar research question set forth by Reynolds (1961). In a study of visual attention in pigeons, he trained two birds to peck a key when it was illuminated with a white triangle on a red background (S^+), and not to peck the key when it was illuminated with a white circle on a green background (S^-). The two stimuli were alternated in unsystematic succession during training. After the discrimination had been acquired, Reynolds presented each stimulus - triangle, circle, red, and green - separately during randomly ordered test periods comprising an extinction session. No responses were emitted by either pigeon in the presence of the green background or the white circle. Hence, both aspects of the S^- had acquired control over not responding. In terms of the S^+, however, one pigeon responded only when the white triangle was presented, while the other bird responded only when the red background was presented. Reynolds' conclusion was that only one dimension of the white triangle on a red background controlled responding, and that the crucial dimension was different for each bird.

Other studies have added generality to the statement that behaviors are differentially controlled by the various details which comprise a complex stimulus (Butter, 1963; Fink and Patton, 1953; Lashley, 1938; 1942; and White, 1958). Skinner (1953) discussed this relation between a particular aspect of the environment and a response under the general heading of "attention" and provided some speculative examples of its occurrence in human behavior. Terrace (1966) has also discussed the phenomenon in relation to supportive evidence, and has concluded that differential reinforcement may be considered a sufficient condition for some element of a complex stimulus to gain control over a particular response.

Some findings in a study by Risley (1968) using preschool Negro children suggest that certain behaviors; namely, saying "Good morning" to teachers, may have come under differential control of racial aspects of teachers. Children in a preschool were given candy for saying "Good morning" when they entered the classroom. Two of the teachers were Caucasian, and a third was Negro. When a single teacher - one of the Caucasian teachers - was dispensing candy, a large percentage of the children greeted both Caucasian teachers, and a much smaller percentage greeted the Negro teacher. Conversely, when the Negro teacher was the only one dispensing candy, a large percentage of the children said "Good morning" to her, and a much smaller percentage greeted both Caucasian teachers. Responses emitted in the presence of one teacher generalized to a same-race, same-sex teacher, and not to a different-race, same-sex teacher.

The present study was proposed to determine which aspect of photographic representations of preschoolers differing in race and sex would acquire control over discriminative responses of Negro children. Next, the effects of a program of differential reinforcement for discriminative responses along the opposite dimension were to be systematically examined. A final objective was to analyze effects of specific vocal (verbal) discriminative response requirements upon the stimulus aspects controlling non-verbal discriminative behaviors.

METHOD

Subjects

Nine Negro children, four boys and five girls, ranging in age from 5,0 to 8,11 ($\bar{x}$ = 6,1) served as subjects. Six of these children were of kindergarten-preschool age. The investigations were conducted at Juniper Gardens Children's Project, located within an all-Negro neighborhood. Each subject had lived in this neighborhood since birth.

Apparatus

The experimental space was a 6 ft. x 6 ft. carpeted and sound-insulated room. White noise was continuously present to mask extraneous sounds. The subject, when seated facing the wall opposite the door to the room, was positioned approximately one foot in front of a panel housing the manipulanda, reinforcement receptacle, and the stimulus display screen. The manipulanda were two 1.5 in. diameter plastic push keys spaced 10 in. apart. A dispensible paper cup set between and eight inches below the response keys served as a receptacle for candies, pennies, and trinkets delivered by a Davis model 310 universal dispenser, which was mounted behind the response panel.

A small translucent screen was centered one foot above the response keys. Color slides were rear-projected onto a 6 in. x 8 in. area of the screen by a Kodak model 250 carousel projector. Standard programming and recording equipment was located in an adjacent room.

Procedure

Part I: Negro Girl-Caucasian Boy Discrimination Training. The purpose of the initial phase of the study was to assess the stimulus class which controlled discriminative responding in the presence of photographs of children who differed from each other along more than one physical dimension. Twelve color photoslides of a single Caucasian boy were randomly alternated with twelve color photoslides of a single Negro girl. Both of these chlldren, as well as all children pictured in subsequently-employed stimuli, were from preschools which were geographically removed from the laboratory. Facial expression and body positioning were varied across photoslides. A brick wall served as a background in all stimuli.

Discrimination training followed a mult (conc VI, Ext.) (conc Ext., VI) procedure. Each stimulus was projected for a fixed duration. When a picture of the Caucasian boy was present, responses on key A produced pennies (candies, or trinkets) at variable intervals, and no consequences were programmed for responses on key B. Conversely, when photographs of the Negro girl were present, responses on key B produced pennies, and no consequences were programmed for key A responses. Manipulanda have been referred to as keys A and B, because right and left specifications were varied across subjects. Table 1 summarizes for each subject the stimulus durations, the average interval of the variable interval (VI) reinforcement contingency, and the response reinforced during each stimulus condition. The average interval of the VI schedule was equated to the fixed stimulus duration, so that responses on the "correct" key would go unreinforced during approximately 25 percent of the stimulus intervals.

INSERT TABLE 1 ABOUT HERE

Additional procedures were included to prevent the acquisition of alternating response patterns and to preclude accidental temporal correlations between stimulus changes and responses to the incorrect key. Only those responses which followed an "incorrect" response by more than five seconds were reinforced. In addition, a five second change-over-delay (COD) was programmed between an incorrect response and presentation of the next photoslide. Each session terminated after projection of all 24 stimuli. Since they were dependent upon the discriminative behavior of each subject, session durations varied.

Subjects 1, 2, 3, and 4 were admitted to the experimental chamber with the following introductory comment, "You can get pennies and candy by pushing these buttons. Start when you see the first picture." After at least nine sessions, training instructions were added. Before initiating the session, the experimenter projected one of the stimulus individuals and, pointing to the correct response key, told the subject, "If you push this button when a

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picture of that person comes on, you can get pennies and candy." Projecting the other stimulus and pointing to the opposite key, the experimenter added, "If you push this other button when a picture of that person comes on, you can get pennies and candy." These training instructions were given in an attempt at establishing the discrimination as quickly and economically as possible.

Subjects 5, 6, 7, 8, and 9 received both sets of instructions at the beginning of discrimination training. Early in training a procedure for increasing response rates was introduced. For all subjects a fixed ratio (FR) contingency was superimposed over the VI schedule. Values of the FR contingency were increased gradually from FR 10 for Subjects 1 through 4, FR 15 for Subjects 5 and 6, FR 30 for Subjects 8 and 9, and FR 35 for Subject 7 to a ratio which each subject failed to execute before termination of the longest interval of the VI.

When at least 75 percent of the totaled responses to each key were occurring reliably in the presence of the relevant stimulus (S^+), a "probe" procedure was initiated. Probe stimuli were introduced for the purpose of determining the dimension(s) along which generalization would occur. For example, it could be said of a subject who responded to photographs of new Negro children (whether boys or girls) identically to the manner in which he had been trained to respond in the presence of the Negro girl stimulus, that he was generalizing along a dimension of race, or that his discriminative responses were under the control of a stimulus class of race.

Probe stimuli pictured new Negro girls, Caucasian girls, Negro boys, or Caucasian boys. Photoslides of from two to four individuals under each race-sex grouping were presented. During probe sessions, three slides were removed at random from the original stimulus sequence and replaced with three photoslides of new individuals. The same three probes were never used for more than two consecutive sessions. Durations of probe stimuli were equal to the duration of each of the other slides in the sequence (one minute, or 30 seconds) and were unaffected by responses on either key. No consequences were programmed for either right or left responses during probes.

Part II: Racial Discrimination Training. The objective of the second phase of the study was to examine the effects of racial discrimination training upon generalization across individuals. Experimental procedures were directed at resolving the question: What are the conditions by which discriminative responses under the control of a stimulus class of sex can be brought under the control of a stimulus class of race? Subjects 1, 2, 4, 7, 8, and 9 from Part I were selected to provide answers.

A new 24-slide stimulus sequence was constructed from three photoslides each of eight different individuals: two Negro girls, two Caucasian girls, two Negro boys, and two Caucasian boys. These stimuli were arranged randomly

in the projector magazine. During one-minute intervals in which a picture of a Caucasian boy or girl was present, only responses on key A were reinforced (VI 1 min.). During intervals in which a picture of a Negro boy or girl was present, only responses on key B were reinforced (VI 1 min.). The five second COD and delay of reinforcement for incorrect responses remained in effect throughout Part II. Each subject was told that he would receive a toy on intermittently-spaced days, if he maintained perfect attendance and pushed buttons "without stopping" throughout all sessions between "toy days."

Early in Part II a high density of reinforcement was programmed for responses on the appropriate key by superimposing a low fixed ratio requirement over a VI 20 or 30 sec. reinforcement schedule. Gradually, as discrimination ratios increased to 80 percent or more, the fixed ratio reinforcement density was reduced, until high discrimination ratios were being maintained by a VI 1 min. contingency alone. The program of discrimination training contingencies designed for each subject during Part II has been summarized in Table 2.

INSERT TABLE 2 ABOUT HERE

When greater than 80 percent of the totaled responses to each key were occurring reliably in the presence of S+s, a second series of probe sessions was begun. Photoslides of new individuals representing each race-sex grouping were interspersed with several of the stimuli which had been presented during the probe sessions of Part I. Non-reinforcement, or extinction (Ext.), was again programmed for all responses during each one-minute probe stimulus.

Discrimination ratios for Subject 9 failed to meet the criterion for the initiation of Part II probes. Hence, racial discrimination training procedures remained in effect for Subject 9, until all other subjects had completed the scheduled probe sessions.

Part III: Extended Racial Discrimination Training. Subjects 1, 2, 4, 7, 8, and 9 from Part II served again in Part III. The purpose of the third phase of the study was to determine the effects of an "extended" racial discrimination training program which employed as stimuli numerous additional individuals from each race-sex grouping. To the sequence of stimuli which had been used in the training portion of Part II were added photoslides of four different Negro girls, four different Caucasian girls, three different Negro boys, and four different Caucasian boys. During early training sessions, no more than three of these new stimuli were intermixed concurrently into the original racial discrimination stimulus sequence. Three new individuals were introduced only after one session during which 80 percent or more of the totaled responses to each key had occurred during S+s. Following presentations of each group of three new stimulus individuals each member of the set of new stimuli was inserted into a randomly selected position within the original "racial" discrimination training sequence.

Stimulus durations were set at one minute, and a VI 30 sec. reinforcement contingency was programmed for correct responses under each stimulus condition. During initial training sessions on this extended stimulus sequence, an FR 35 contingency was superimposed over the VI 30 sec. schedule. Over subsequent sessions reinforcement probabilities were systematically decreased, contingent upon increments in discrimination ratios (the percentage of right and left responses emitted during S^+ conditions). This change in reinforcement probabilities was accomplished according to the following succession of contingencies: FR 35, VI 30 sec.; VI 30 sec.; VI 1 min. In addition, the reinforcement delay following incorrect responses was increased to 15 sec., and the COD was increased to 30 sec. Stimulus durations were fixed at one minute for all subjects.

Subject 9 was given a modified program of training. Immediately following Part II, eight photoslides of the Caucasian girl from Part II, nine slides picturing the Negro girl from Part II, the four photoslides of the new Caucasian girls, and the photoslides of the three new Negro girls were randomly intermixed to comprise Subject 9's racial discrimination training stimulus sequence throughout Part III. This modification of Subject 9's stimulus sequence was included to provide comparison data on the effects of extended racial discrimination training upon generalization performance, holding sexual aspects of training stimuli constant. The program of reinforcement delays, CODs, and reinforcement schedules for Subject 9 was identical to that described for Subjects 1, 2, 4, 7, and 8.

A third series of probe sessions was begun for all six subjects when discrimination ratios of at least 80 percent were again being reliably recorded. Photoslides of 20 new individuals were added to a few of the probe stimuli which had been presented in Parts I and II. As before, extinction was programmed during one-minute presentations of each of these probes.

Part IV: Analysis of Some Vocal Verbal Variables. The conditions in effect immediately prior to each probe sessions under Parts I, II, and III were identical to conditions which had preceded training sessions, i.e., no differential instructions were given. This probe arrangement will be referred to in Part IV as REG. The purpose of Part IV was to determine the effects of various experimental manipulations conducted just prior to each probe session. Presentation of a complete set of probe stimuli will be called a "probe series."

The first set of experimental procedures will be referred to as LABEL---REG. Prior to each session under this condition, the experimenter entered the chamber and instructed: "Each time a picture comes on, tell me whether you see a white person or a black person. Do not push the buttons." Stimuli comprising the Extended Racial Discrimination training sequence were then presented in succession. Pennies, candies, trinkets, and "praises" from the experimenter were delivered contingent upon emission of vocal stimulus class labels appropriate to each of the training stimuli. Upon emission of

an inappropriate vocal label, a prompt of the form, "Say white (black) person" was interjected by the experimenter. Pennies (candies, and trinkets) were withheld, and the next stimulus was presented only after the subject had repeated the appropriate "white person" or "black person" labeling response. Subjects were told that they would get to keep all their reinforcers if they did, "a good job" (during the next probe session). More precisely, all pre-session earnings were awarded contingent upon maintenance of discrimination ratios equal to or exceeding 75 percent under training stimuli within the succeeding probe session.

Introduction of additional instructions comprised a second experimental condition which will be referred to as LABEL, PUSH---REG. Under this condition, subjects were told by the experimenter: "Each time a picture comes on, tell me whether you see a white person or a black person, then push the right (correct) button." Reinforcers were delivered after each correct vocal label-button push combination and withheld after emissions of incorrect button pushes and/or vocal labels. Prompts of the form "Say 'black (white) person'" or "Push the other button" were delivered by the experimenter following incorrect labeling and button-pushing responses, respectively. Again, progression to the next stimulus in the training sequence was contingent upon the subject's emitting responses which were appropriate to the stimulus condition. After each presentation of the complete set of training stimuli, a standard probe session was run.

Nearly identical to the procedures comprising condition LABEL, PUSH---REG. were procedures comprising a third experimental condition which will be referred to as LABEL, PUSH---LABEL. The former and latter conditions differed only with respect to the presence or absence of instructions following pre-probe situations. Immediately prior to each probe session under condition LABEL, PUSH---LABEL, the subject was told by the experimenter: "I'll be standing just outside. Each time a picture comes on, shout out to me whether you see a white person or a black person." Condition LABEL, PUSH---LABEL was designed for the purpose of directly affecting some of the events within actual probe sessions.

Under a condition which will be referred to as LABEL, PREDICT, PUSH---LABEL, NEW PROBES, PREDICT, subjects were again instructed and reinforced for appropriate labeling and button pushing before and during probe sessions. Following is the full set of instructions delivered during the pre-probe situations:

> "Each time a picture comes on, tell me whether you see a white person or a black person, tell me whether you're going to push the 'white person button' or the 'black person button,' then push the right (correct) button."

Probes presented under this condition were photoslides of new children whom the subjects had presumably never seen.

In the condition which will be referred to as NEW PROBES, photoslides of new children were presented during probe sessions which were not preceded by training stimulus presentations and instructions.

The boy and girl training stimulus sequence was used throughout Part IV for all subjects except Subject 9, who was run on the all-girl sequence through the fifth probe series and thereafter on the boy and girl sequence. This change in training sequences is indicated in the bottom graph of Figure 12 by a break in the abscissa. Discrimination training procedures comprising a condition which will be referred to as PUSH---REG. were introduced shortly after the change in stimulus sequences. Just prior to pre-probe stimulus presentations, Subject 9 was instructed, "Each time a picture comes on, push the right (correct) button. Don't say anything." Only correct responses were reinforced. When Subject 9 pushed the incorrect button, he was prompted by the experimenter to "Push the other button." After several (five to ten) correct button-pushes, the next stimulus was presented.

Experimental conditions in order of their introduction for each subject over Part IV probe series are presented beneath respective graphs in Figure 12. Procedural manipulations during pre-probe presentations of stimuli are identified across series of probe sessions by labels above the horizontal dotted lines in Figure 12. Manipulations introduced for the purpose of affecting actual probe sessions are identified by labels beneath horizontal dotted lines.

RESULTS

Discrimination ratios, percentages of responses to the right and left keys under S^{+} conditions, have been plotted across four-session blocks comprising Parts I, II, and III in the top graphs in Figures 1 through 8. The point in training indicated by K in Figures 1 through 4 corresponds to the introduction of the "training instructions." Periods occupied by probe sessions at the end of each phase have also been demarcated.

INSERT FIGURES 1 THROUGH 8 ABOUT HERE

Generalization data obtained over each series of probe sessions have been presented in the bottom graphs in Figures 1 through 8. For groups of probe stimuli picturing Negro girls (NGs), Caucasian girls (CGs), Negro boys (NBs), and Caucasian boys (CBs) is plotted the percentage of responses on that button which had been appropriate during presentations of Negro children in training. The greater the displacement of the first and second functions (for NG and CG probes) above 50 percent and the greater the displacement of the third and fourth functions (for NB and CB probes) below 50 percent, the greater the credibility of a statement that the subject was generalizing along a dimension of sex. The greater the displacement of the first and third

functions above 50 percent and the greater the displacement of the second and fourth functions below 50 percent, the greater the credibility of a statement that the subject was generalizing along a dimension of race.

Part I: Negro Girl-Caucasian Boy Discrimination Training.

For subjects 1, 3, and 4, discrimination ratios before introduction of the training instructions were below 50 percent. Subsequent to the training instructions, discrimination ratios consistently above 75 percent were recorded. Subject 2's initial discrimination ratios were variable between 49 percent and 66 percent on the right key and between 53 percent and 100 percent on the left key. Only 1 percent of his responses, however, were on the left key. After delivery of the training instructions, equal response rates on the two keys and discrimination ratios reliably exceeding 90 percent were recorded. See top graphs in Figures 1 through 8.

Subsequent to the establishment of moderate and sustained response rates and continued maintenance of discrimination ratios above 75 percent, probe sessions were initiated. In the presence of NG probes, the percentages of "Negro" key responses ranged from 64 percent to 100 percent (mdn. = 93 percent); in the presence of CG probes, from 62 percent to 99 percent (mdn. = 93 percent); in the presence of NB probes, from 3 percent to 30 percent (mdn. = 8 percent); and in the presence of CB probes, from 4 percent to 34 percent (mdn. = 15 percent). Sex generalization patterns were obtained for all subjects. See bottom graphs in Figures 1 through 8.

Discrimination ratios obtained under training stimuli during Part I probe sessions ranged from 78 percent to 98 percent (right key) and from 75 percent to 98 percent (left key).

Part II: Racial Discrimination Training.

Discrimination ratios computed over the first six to eight sessions of Racial Discrimination Training ranged from 46 percent to 75 percent (right key) and from 43 percent to 73 percent (left key). Refer to top graphs in Figures 1, 2, 4, 6, 7, and 8. After progression through the sequence of Part II training contingencies (see Table 2), the percentages of appropriate responses increased across subjects. Over the eight sessions immediately preceding the initiation of probe sessions, discrimination ratios for Subjects 1, 2, 4, 7, and 8 ranged from 89 percent to 98 percent (right key) and from 91 percent to 98 percent (left key).

Subject 9's discriminative performance failed to meet the criteria for commencement of probe sessions. His discrimination ratios over the last eight of 44 training sessions were 71 percent (right key) and 93 percent (left key).

Racial Discrimination Training procedures produced no clear effect upon generalization patterns obtained for Subjects 2, 4, and 7. During NG probes, the percentage of "Negro" key responses for these subjects ranged from 71 percent to 94 percent; during CG probes, from 74 percent to 97 percent; during NB probes, from 16 percent to 40 percent; and during CB probes, from 3 percent to 50 percent. See bottom graphs in Figures 2, 4, and 6.

Subjects 1 and 8, however, tended to randomly distribute their responses during probe stimuli (refer to bottom graphs in Figures 1 and 7). Note that Subject 1's responses were less random during CG and CB probes, suggesting perhaps a weak stimulus control by racial aspects of stimuli.

In conclusion, after training on a racial discrimination, patterns of generalization along a dimension of sex persisted in the data for three subjects. For the other two subjects, random responding was recorded during test probes, i.e., responses were under the control of neither sex nor race aspects of the stimuli. Discrimination ratios obtained under training stimuli during Part II probe sessions ranged from 91 percent to 97 percent (right key) and from 91 percent to 98 percent (left key).

Part III: Extended Racial Discrimination Training.

Discrimination ratios computed over the first four to eight sessions of Extended Racial Discrimination Training ranged from 69 percent to 99 percent (right key) and from 86 percent to 97 percent (left key). A decrement in discrimination ratios was observed for all subjects upon introduction of the first stimulus sequence which contained all fifteen new stimuli. Over the eight sessions immediately prior to the initiation of probe sessions, however, discrimination ratios ranged from 92 percent to 98 percent and from 82 percent to 96 percent. Refer to top graphs in Figures 1, 2, 4, 6, 7, and 8.

During Part III probe sessions, Subjects 2, 4, 7, and 9 continued to produce clear patterns of sexual generalization (see bottom graphs in Figures 2, 4, 6, and 8). For these subjects the percentages of "Negro" key responses during NG probes ranged from 76 percent to 98 percent; during CG probes, from 80 percent to 96 percent; during NB probes, from 1 percent to 8 percent; and during CB probes, from 3 percent to 23 percent.

Though Subject 1 was noted to respond predominantly upon the "Caucasian" key in the presence of CG test stimuli, he responded randomly during NG, NB, and CB probes (see right-most graph at bottom of Figure 1). Subject 8 was observed to respond predominantly upon the "Negro" key in the presence of NG probes, but randomly under presentations of stimuli from the other race-sex probe groupings (see right-most graph at bottom of Figure 7).

Hence, during probes which followed Extended Racial Discrimination Training, four subjects continued to emit responses which were clearly under the control of sex aspects of the test stimuli, while the remaining two subjects continued to respond in a near-random fashion.

Discrimination ratios under training stimuli during Part III probe sessions ranged from 92 percent to 99 percent (right key) and from 90 percent to 99 percent (left key).

Response Rates During Presentations of Training and Probe Stimuli.

Moderate and near-equal response rates on both manipulanda in the presence of training stimuli were maintained by the VI schedules for all subjects. Rates computed under training stimuli over the first three phases of the study for Subject 2, a representative subject, have been presented in Figure 9. Plotted in the top half of Figure 9 are Subject 2's response rates on the right key. Responses per minute on the left key have been plotted in the bottom half. Filled circles represent rates in the presence of training photoslides picturing Negro children (the S^+ condition for responses to the right key). Open circles represent rates recorded during photoslides of Caucasian children (the S^+ condition for responses to the left key).

INSERT FIGURE 9 ABOUT HERE

Note the variable increment in rates subsequent to K and over the period during which gradually increasing FR requirements were superimposed over the VI contingency. Although extremely variable response rates were recorded throughout the study, the incremental trend was arrested around Block 13. Median response rates during S^+ conditions for Subject 2 over the remainder of Negro Girl-Caucasian Boy Discrimination Training were 187.0 rsp./min. (right) and 164.6 rsp./min. (left). Median rates computed during S^- conditions from Block 13 to the end of Part I were 5.6 rsps./min. (right) and 4.1 rsps./min. (left).

During Racial Discrimination Training, response rates under S^+ conditions were variable around medians of 157.4 rsps./min. (right) and 128.6 rsp./min. (left). Under S^- conditions, medians of 4.5 rsp./min. (right) and 4.3 rsps./min. (left) were recorded.

Over Extended Racial Discrimination Training, median rates during S^+ conditions were 178.9 rsps./min. (right) and 153.6 rsps./min. (left). Median response rates during S^- conditions for Part III were 9.2 rsps./min. (right) and 16.0 rsps./min. (left).

Several of the subjects were occasionally observed to continue responding on a particular key through the onset of an S^- and to switch to the appropriate button only after a number of incorrect responses had been emitted.

The probability of such "overlap" responding, as evidenced in response rates of Subject 2 (Figure 9), appeared to be sometimes directly, but at other times inversely proportional to rates on each key.

In the preceding sections of this paper, generalization data were plotted in terms of the percent of total responses recorded within race-sex groupings of probe stimuli. Some information should also be provided regarding absolute rates of response obtained during presentations of individual photoslides comprising each race-sex grouping. The data computed for Subject 2 were again judged as representative of the results obtained for other subjects. Subject 2's response rates during individual stimuli comprising probe groupings from Parts I, II, and III are presented in Figure 10. Responses to the right key, responses reinforced during presentations of Negro children during training, are represented by filled circles. Responses to the left key, responses reinforced during presentations of Caucasian children during training, are represented by open circles.

INSERT FIGURE 10 ABOUT HERE

Across subjects, it was noted that response rates during probes were either within the range of rates recorded under training stimuli or were extremely low. It was observed from a very early point in the study (during the Part I probe series for some subjects) that particular probe stimuli controlled zero response rates, i.e., they had become functionally discriminative for non-reinforcement. In the record of response rates for Subject 2 (Figure 10) are occasional probe intervals during which zero or near-zero rates were recorded on both keys.

Data collected for Subject 4 during the probe series which followed NG - CB Discrimination Training were unlike data obtained for other subjects and provide the clearest representation of the discriminative function of probes. During 47 or the 65 probes presented in the first probe series, Subject 4 emitted less than ten responses on each key. Such low-rate probe intervals were recorded much less frequently for other subjects, as well as for Subject 4 over probe sessions which terminated Parts II and III.

Following NG - CB Discrimination Training, median response rates of 145.5 rsps./min. on the right key in the presence of NG and CG probes and of 91.5 rsps./min. on the left key during NB and CB probes were recorded for Subject 2 (Figure 10). Similar rates had been recorded on the right key during NG photoslides and on the left key during CB photoslides in Part I training. By the same token, response rates on the left key during NG and CG probe stimuli and rates on the right key during NB and CB probes were nearly identical to response rates on the left key during NG and CG probe stimuli, and rates on the right key during NB and CB probes were nearly identical to response rates which had been recorded during S^- conditions in NG - CB Discrimination Training.

Note the increased variability of rates on each key during individual probe stimuli which followed Racial Discrimination Training. Across all subjects it became increasingly difficult within Part II probe sessions to predict which key would be pushed upon presentation of a given photoslide (particularly for Subject 1 and Subject 8).

Rather erratic response rates were again recorded for Subject 2 across individual stimuli comprising the NG and the CB probe groups presented after Extended Racial Discrimination Trnining. In general, response rates on each key in the presence of individual probes following Part III training either fell into patterns like those which were described for all subjects during probes which followed NG - CB Discrimination Training or became even more unpredictable than they had been during probes which followed Racial Discrimination Training.

Summary of Generalization Patterns Across Individual Probe Stimuli.

Displayed in Figure 11 are generalization patterns recorded during individual photoslides comprising each of the four race-sex probe groupings. Presented for each stimulus are the percentages of presentation of that stimulus upon which various percentages of the response total were to the "Negro" key. These data were calculated from results obtained for all subjects over probe sessions from Part I, II, and III. The gradients plotted in Figure 11 hence reflect any effects of Racial Discrimination Training and of Extended Racial Discrimination Training, as well as results generated during the probes which followed NG - CB Discrimination Training.

INSERT FIGURE 11 ABOUT HERE

At the top of Figure 11 are hypothetical patterns which would be produced by "perfect" generalization of responses to racial vs. sexual aspects of the individuals pictured in probes. Note in the two upper middle graphs that for more than half of the stimuli comprising the NG set of probes and for more than half of the stimuli comprising the CG set of probes, 90 percent or more of the totaled responses were to the "Negro" key on greater than 50 percent of the presentations. Conversely, (see lower graphs, Figure 11) for more than half of the stimuli comprising the NB set of probes and for more than half of the stimuli comprising the CB set of probes, 10 percent or fewer of the totaled responses were to the "Negro" key on greater than 50 percent of the presentations. Clearly, these patterns are most similar to those which would be expected from subjects who were generalizing along a dimension of sex. Also shown in Figure 11 is the finding that individual stimuli comprising each race-sex probe grouping controlled comparable patterns of responses across subjects.

Note in Figure 11 that during a relatively large percentage of the presentations of some NG and CG probes, only 0-9 percent of the combined responses were to the "Negro" key. Likewise, on a significant percentage of the presentations of some NB and CB probes, 90-100 percent of the combined responses were to the "Negro" key. It was mentioned earlier that some of the probe stimuli were noted to have become discriminative for non-reinforcement -- that zero or near zero rates were emitted in their presence. Also, it was mentioned that subjects were occasionally observed to persist in responding on a particular key into the next stimulus interval (overlap responding). Sometimes responses on the "Caucasian" key overlapped into an NG or CG probe stimulus interval. By the same token, sometimes responses on the "Negro" key overlapped into an NB or CB probe interval. If, in these instances, the subject then stopped responding for the duration of the probe interval, his responses under NG and CG probes were recorded as 0-9 percent to the "Negro" key and his responses under NB and CB probes were recorded as 90-100 percent to the "Negro" key.

Part IV: Analysis of Some Vocal Verbal Variables.

A "racial generalization ratio" (RGR) was computed for every subject after each probe series of Part IV. This RGR was obtained by dividing the sum of responses to the "Negro" key in the presence of NG and NB probes and responses to the "Caucasian" key in the presence of CG and CB probes by the total number of responses to both keys. For comparison purposes, a "sexual generalization ratio" was also calculated after each probe series. This measure was derived by dividing the sum of "Negro" key responses during NG and CG probes and "Caucasian" key responses during NB and CB probes by the total number of responses to both keys.

Presented in Figure 12 are RGRs and SGRs for Subjects 1, 2, 4, 7, 8, and 9 across repeated sets (series) of probe presentations. Below the RGRs and SGRs obtained within each probe series is the code appropriate to conditions which were in effect.

INSERT FIGURE 12 ABOUT HERE

During those REG. conditions antecedent to pre-probe and probe session manipulations, subjects tended either to generalize their responses along a stimulus dimension of sex (producing relatively high SGRs) or to distribute their responses randomly between the two keys (yielding SGRs of approximately 50 percent). Both of these response patterns generated RGRs of approximately 50 percent.

The criterion of 75 percent which had been employed with discrimination ratios during Parts I, II, and III to define racial discrimination was adopted as a quantitative criterion for defining racial generalization on the basis

of RGRs calculated in Part IV. To it was added a distributional criterion: a requirement that greater than 50 percent of the responses to be recorded on the "Negro" key during presentations of NG and NB probes, and that greater than 50 percent of the responses be recorded on the "Caucasian" key during presentations of CG and CB probes. These two criteria were met only once during the REG. condition which preceded experimental manipulations. Although during the fourth probe series for Subject 1 an RGR of 78.4 percent was obtained, 43.9 percent of that subject's responses during CB probes were on the "Negro" key, and only 67.5 percent of his responses during NG probes were on the "Negro" key. Neither of the cases of apparent "racial" generalization was maintained through the probe series which immediately followed it.

After addition of the labeling instructions during the pre-probe situations, all subjects emitted appropriate labeling responses on nearly 100 percent of the stimulus presentations. Although no formal data were obtained on labeling errors, no subject was observed to mis-label more than two photoslides in any given run through the 24 training stimuli.

Introduction of condition LABEL---REG. produced no measured effect. Immediately upon introduction of condition LABEL, PUSH---REG., Subject 1 and Subject 2 began generalizing along a racial dimension. Note in Figure 12 that when condition LABEL, PUSH---REG. was introduced for Subject 8, his RGR increased only to 73.6 percent. Subject 8 began generalizing along a racial dimension, however, after half the stimuli comprising that probe set had already been presented. RGRs computed separately for the first and second halves of the eight probe series for Subject 8 were 42.3 percent and 98.7 percent, respectively.

Between the second introduction of conditions LABEL---REG. and LABEL, PUSH---REG., Subject 9 was exposed to condition PUSH---REG. This condition was programmed primarily for the purpose of increasing Subject 9's discrimination ratios after changing him from the all-girl training stimulus sequence to the boy and girl sequence. Following this change, Subject 9's discrimination ratios had dropped from 85.1 percent (right key) and 88.3 percent (left key) to 70.2 percent (right key) and 76.2 percent (left key). Condition PUSH---REG. was, in fact, sufficient to increase Subject 9's discrimination ratios to 91.3 percent (right key) and 81.6 percent (left key).

Condition LABEL, PUSH---REG. produced no change in the generalization data obtained for Subject 9, either when imposed on the all-girl training sequence or when imposed on the boy and girl training sequence. Neither did the condition affect RGRs recorded for Subject 4 and Subject 7.

During the ninth probe series, when condition LABEL, PUSH---LABEL was first in effect for Subject 9, an RGR of 74.5 percent was obtained, but the distributional criterion was not met. Upon continuation of condition LABEL, PUSH---LABEL into the tenth probe series, however, both criteria were met--

Subject 9 was generalizing along a dimension of race. Under neither of the probe series during which condition LABEL, PUSH---LABEL was in effect for Subject 4, were that subject's RGRs noted to increase.

Introduction of condition LABEL, PREDICT, PUSH---LABEL, NEW PROBES, PREDICT for Subjects 4 and 7 clearly produced no effect upon Subject 4's generalization performance. For Subject 7, however, an RGR of 75.2 percent was calculated. At the same time, Subject 7's performance met the distributional criterion for description as racial generalization.

Racial generalization recorded for Subjects 1, 2, 8, and 9 was maintained over reinstatements of condition REG. and during presentations of probe slides picturing new children.

To summarize, for four of the six subjects stimulus control was transferred from a dimension of sex to one of race only under conditions in which the subject was required first to label stimuli and then to emit the appropriate button-pushing response. The probability of transfering control across stimulus dimensions was increased by insuring that labeling responses occurred during presentations of probes. The transfer of stimulus control was found to persist during presentations of new test stimuli and upon withdrawal of the labeling requirement.

DISCUSSION

A general finding in studies where children have been required to match geometric shapes which are comparable in either color of form is that children between the ages of three and six years match stimuli with respect to color, whereas older children match according to object form (Brian and Goodenough, 1929; Corah, 1964, and Descourdres, 1913). One dimension of the complex stimulus provided by the representation of another person is form. And points along the form dimension usually control responses such as "Johnny," "short," "hairy," etc. Color is also a dimension of people, and in our society comes to control such responses as "Indian," "Whitey," "Negro," etc.

On the basis of reported prepotency of color aspects of arbitrary stimuli in the control of stimulus matching responses, a very reasonable prediction would be that the color dimension of people should control discriminative behaviors in younger children, and that the dimension of form (sex) should control discriminative behaviors in older children. Clark and Clark (1939), Goodman (1952), and Landreth and Johnson (1953) have found that some behaviors in young children do come under the control of race. And Risley's (1968) observation of generalization along a stimulus dimension of race appears to be in line with these findings.

Contradictory results were presented by Stevenson and Stewart (1958). In their study, dimensions of race and sex were directly varied, and the sex dimension was found to control discriminative behaviors. The present

study also found sex to be the controlling aspect in the discrimination of stimuli which differed in both sex and race (NG-CB Discrimination).

Some results reported by Baron (1965) are relevant to a discussion of these seemingly discrepant findings. Baron found that line orientation acquired discriminative control only when the presence or absence of the line was the only stimulus dimension along which training stimuli varied. In the present study and in the Stevenson and Stewart (1958) study, where stimuli differed along dimensions of sex and race, sex was found to be the "distinctive" stimulus element. Contradictory findings may hence be explained in terms of control over the number of dimensions that could possibly be used by the organism in learning a discrimination. Applying this interpretation, Risley's (1968) results do not contradict those of the present investigation. In his study, teachers were of the same sex. And under these conditions, race was implicated as the "distinctive" stimulus aspect. Future studies of stimulus control where more than one stimulus dimension is simultaneously varied will provide the kind of information which is necessary to the functional specification of hierarchies of dimensional distinctiveness.

The present research, however, was not directed toward comparisons of the control exerted by other dimensions of people. Nor was its next strategy to examine the effects of various subject variables. Instead, the research methods were turned to identification of the conditions by which discriminative responses could be brought under the control of the non-distinctive aspect (race) of other children. It was found that differential reinforcement of button pushing under photoslides of Negro vs. Caucasian children was sufficient to bring responses on the two respective buttons under the control to the training stimuli, but was not sufficient to bring the differential responding under control of racial aspects of photoslides of new children. Increasing the number of different individuals presented in training (Extended Racial Discrimination Training) was also found to be insufficient for producing generalization along racial aspects.

It should be noted, however, that aspects of race were not the only ones which were varied during differential reinforcement. The discriminative stimuli during Racial Discrimination Training and Extended Racial Discrimination Training differed with respect to unique facial characteristics and dress, as well. It is within reason to assume that facial characteristics (or dress), rather than racial aspects, follow sex in any given subject's hierarchy of dimensional distinctiveness. In view of the number of sessions required in training the discriminations in Parts II and III, it is highly likely that subjects could have been learning to discriminate on the basis of facial characteristics of the child in each photoslide. After all, the probability that subjects from a segregated neighborhood are reinforced in their natural environments for discriminating others with regard to unique facial characteristics, is higher than the probability that they are reinforced for discriminating others on the basis of racial features.

Terrace's (1966) conclusion that differential reinforcement may be considered a sufficient condition for some element of a complex stimulus to gain control over a particular response is not brought into question. During Parts II and III of the present study, subjects may, in fact, have been reinforced for discriminating along dimensions other than race. In the presence of generalization probes, "new kids" from the subject's viewpoint, responses were either randomly distributed, or they again came under the control of a previously distinctive stimulus dimension - sex.

Several studies have noted that pretraining subjects to emit verbal names for stimuli facilitates their acquisition of a discrimination of those stimuli (Cantor, 1955; Dietze, 1955; Jeffrey, 1953; and Norcross and Spiker, 1957). Shepard (1956) has provided some data which indicates that training preschoolers to emit a verbal label in the presence of a group of discriminative stimuli (colors) has the effect of broadening the gradient of generalization across the stimuli. On the basis of these observations, an analysis of effects of vocal verbal stimulus class labeling upon the stimulus aspect controlling responses during generalization probes was begun (Part IV).

The design of Part IV permitted separation of the effects produced by (a) a verbal stimulus labeling requirement alone in the pre-probe situations; (b) a stimulus labeling requirement in conjunction with button-pushing in the pre-probe situations; (c) reinforced stimulus labeling and button-pushing responses in probe sessions, as well as in the pre-probe situations; and (d) stimulus labeling-response prediction-button pushing requirements during probe sessions in which new probes were presented. It was found that reinforcement of racial verbal stimulus labeling was not in itself sufficient to bring discriminative responses under control of racial aspects of probe stimuli. Generalization along a racial dimension was noted only when the labeling requirement was imposed in conjunction with differentially-reinforced button pushing in the pre-probe experimental situation or in actual probe sessions.

Conclusive statements regarding the condition during the eleventh probe series which was responsible for the racial generalization recorded for Subject 7 are precluded by an absence of adequate comparison conditions. Neither the PREDICT condition nor the NEW PROBE condition was sufficient to produce an increment in RGRs for Subject 4.

All conditions programmed during Part IV were found to be ineffective with Subject 4 in transferring stimulus control to a dimension of race. It has been suggested that subjects may have learned the racial discrimination on the basis of unique facial characteristics of children presented during training. A proposed manipulation for Subject 4 would have provided informative data regarding the merits of this interpretation. Subject 4 was to have been reinforced for verbal racial stimulus class labeling during re-training on a racial discrimination sequence comprised of photoslides of new individuals.

A verbal labeling requirement imposed during acquisition of the discrimination may prove to be sufficient in overriding tendencies to base discriminations on facial characteristics of other children.

Selection of a multiple baseline design during Part IV was justified by the demonstrated irreversibility of the racial generalization upon reinstatements of condition REG. (see Figure 12). Note, furthermore, that during the introduction of new probes for Subject 8 (eleventh probe series) and Subject 9 (twelfth probe series), the racial stimulus control was maintained.

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Table 1

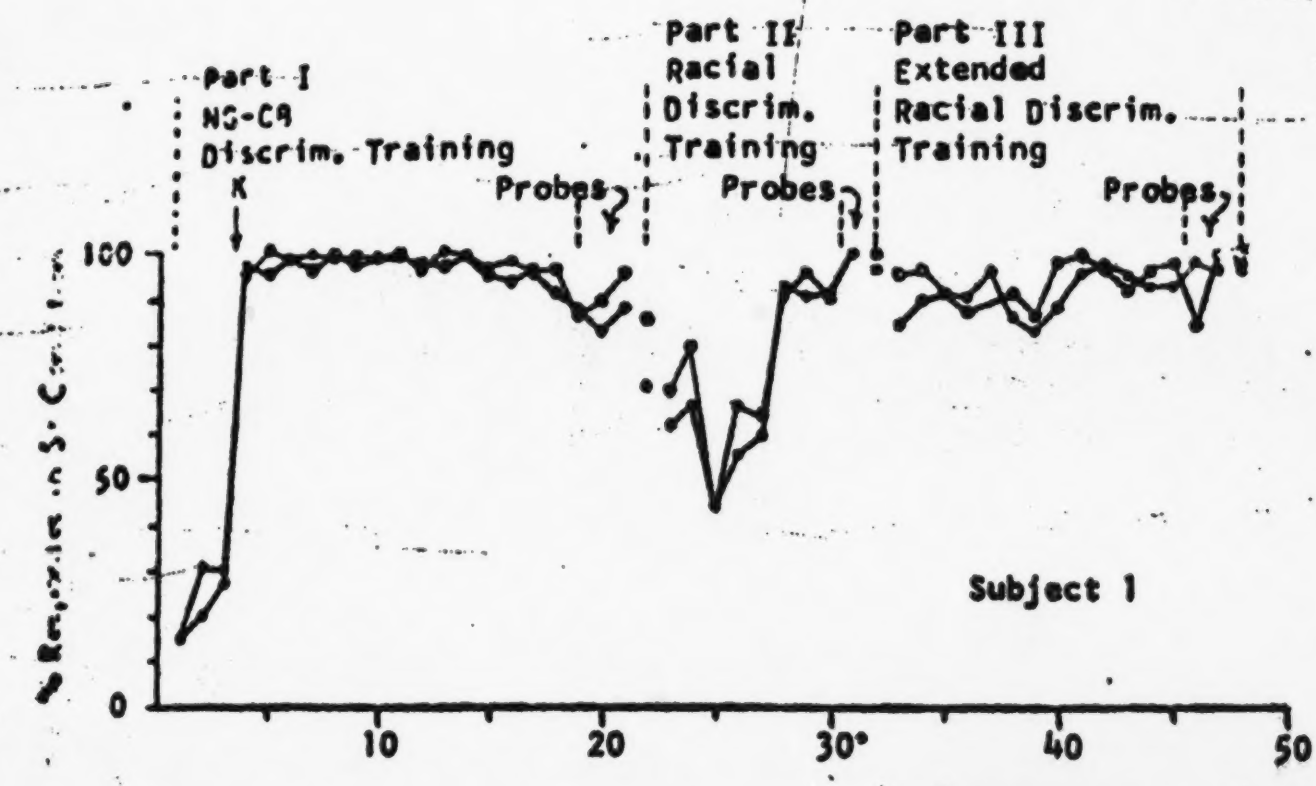
Basic Procedural Variations Across Subjects

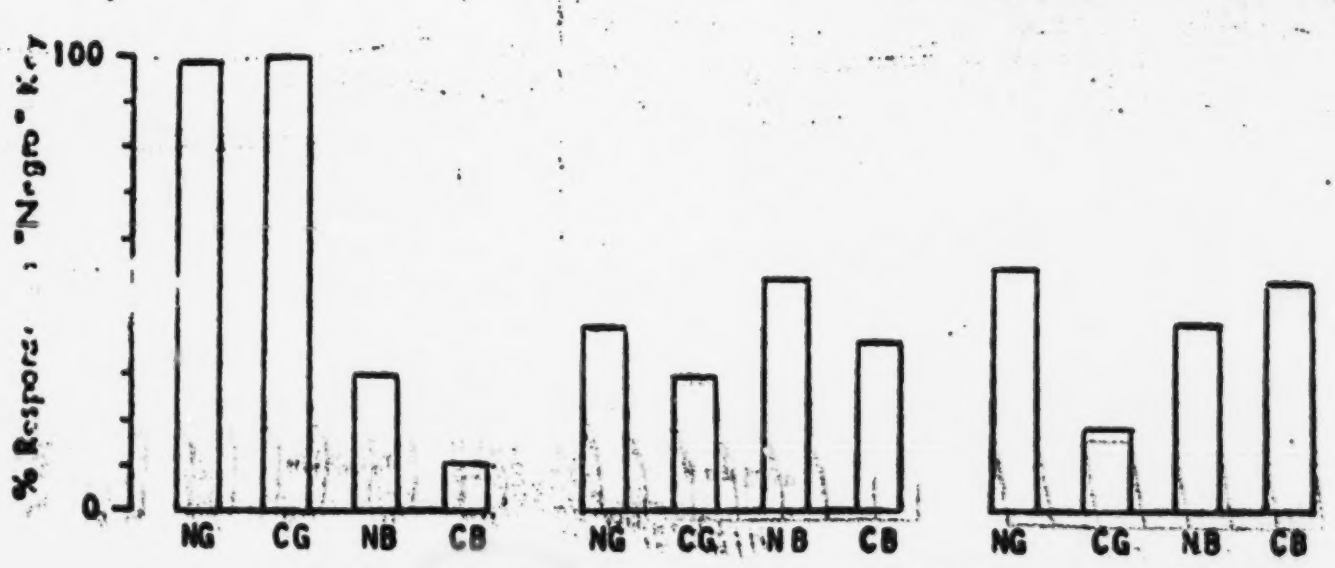
Subject	Value of VI and Duration of Each Stimulus Part I	Parts II & III	Response Reinforced during Each Stimulus Condition Part I Negro Girl	Part I Caucasian Boy	Parts II & III All Negroes	Parts II & III All Caucasians
1	one min.	one min.	L	R	L	R
2	one min.	one min.	R	L	R	L
3	one min.		L	R		
4	one min.	one min.	R	L	R	L
5	30 sec.		L	R		
6	30 sec.		R	L		
7	30 sec.	one min.	R	L	R	L
8	30 sec.	one min.	R	L	R	L
9	30 sec.	one min.	L	R	L	R

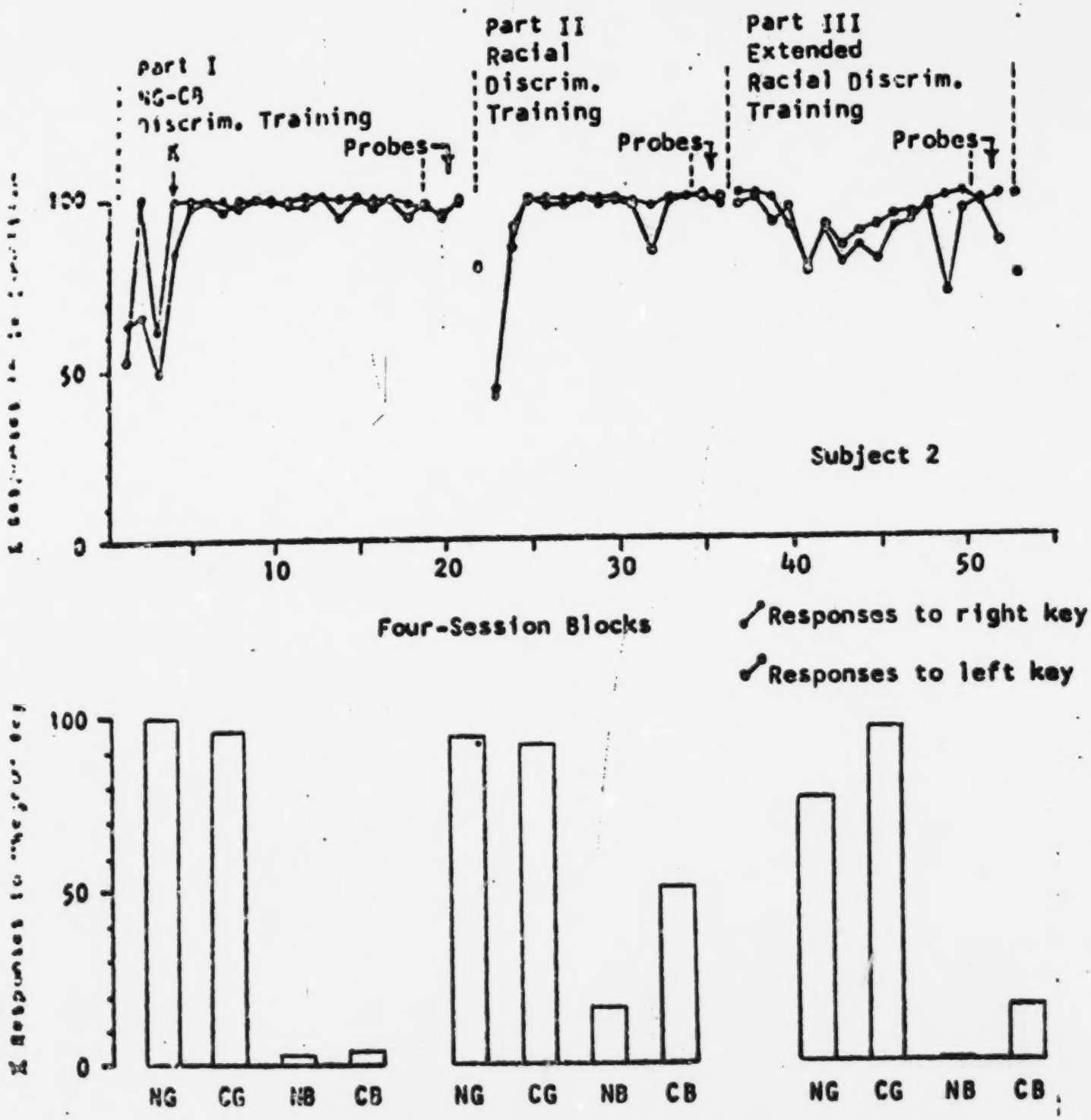
Table 2

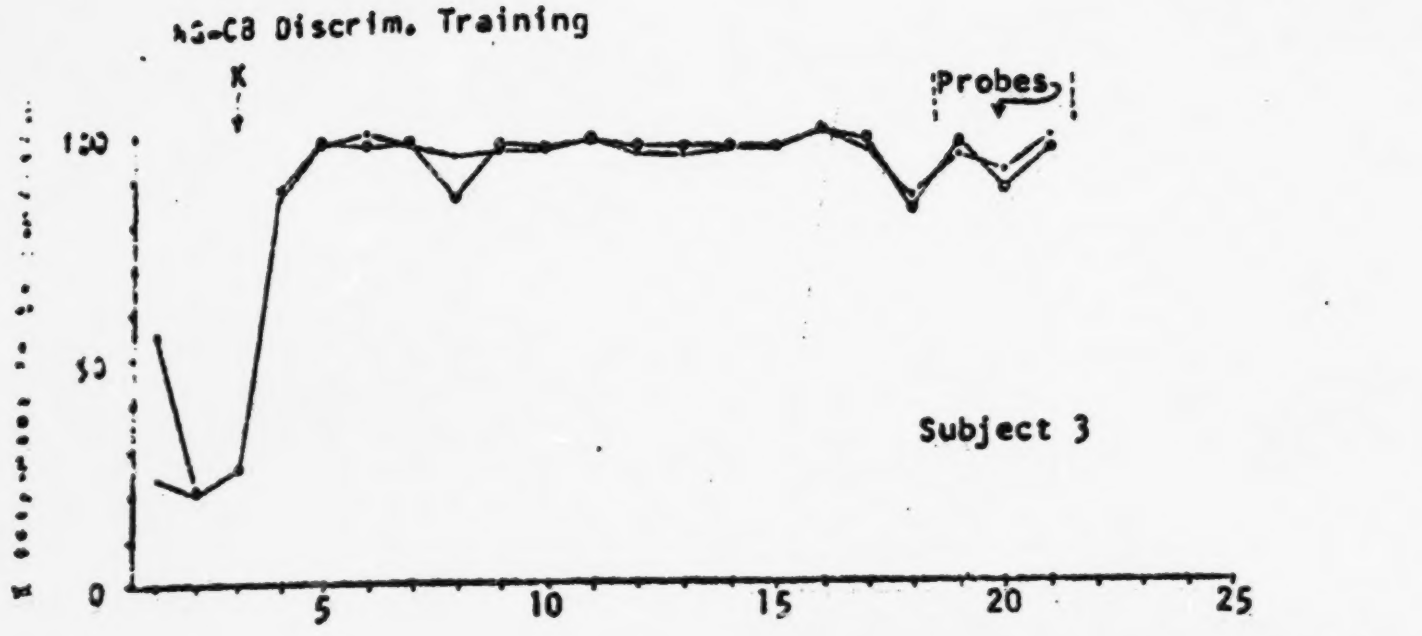
Program of Contingencies
Part II: Racial Discrimination Training

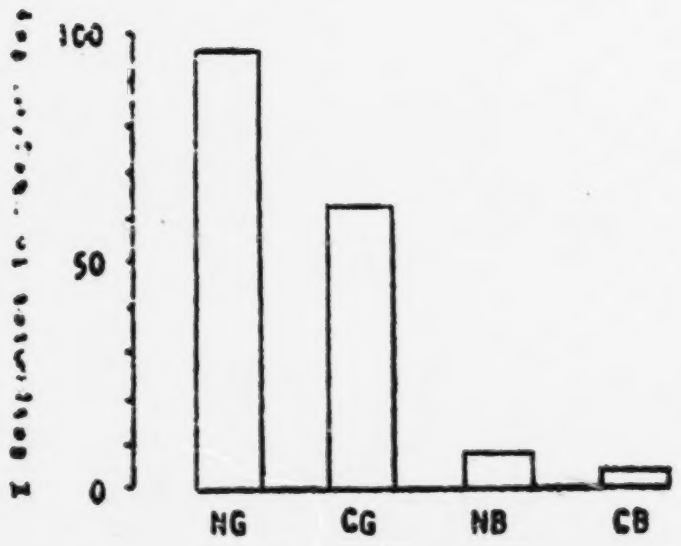
Subject	Stimulus Duration	Reinforcement Contingency	Number of Sessions
1	1 min.	VI 30"	3
	3 min.	VI 30"	6
	1 min.	VI 30"	8
	1 min.	VI 20", FR 50	5
	1 min.	VI 30", FR 75-100	6
	1 min.	VI 1', FR 150-500	5
2	1 min.	VI 30"	4
	3 min.	VI 30", FR 50	5
	1 min.	VI 30", FR 50	20
	1 min.	VI 30", FR 300	4
	1 min.	VI 1', FR 100-500	16
4	1 min.	VI 30"	5
	3 min.	VI 30", FR 50	10
	1 min.	VI 20", FR 50	23
	1 min.	VI 30", FR 50	1
	1 min.	VI 30", FR 300	3
	1 min.	VI 1', FR 300-500	12
7	1 min.	VI 30"	7
	3 min.	VI 20"	6
	1 min.	VI 30", FR 50	21
	1 min.	VI 30", FR 300	6
	1 min.	VI 1', FR 300-500	13
8	1 min.	VI 30"	6
	3 min.	VI 20"	5
	1 min.	VI 20"	20
	1 min.	VI 30"	4
	1 min.	VI 1', FR 300-500	8
9	1 min.	VI 30"	3
	3 min.	VI 30"	4
	1 min.	VI 20", FR 10-50	17
	1 min.	VI 30", FR 100	1
	1 min.	VI 1', FR 100-500	19

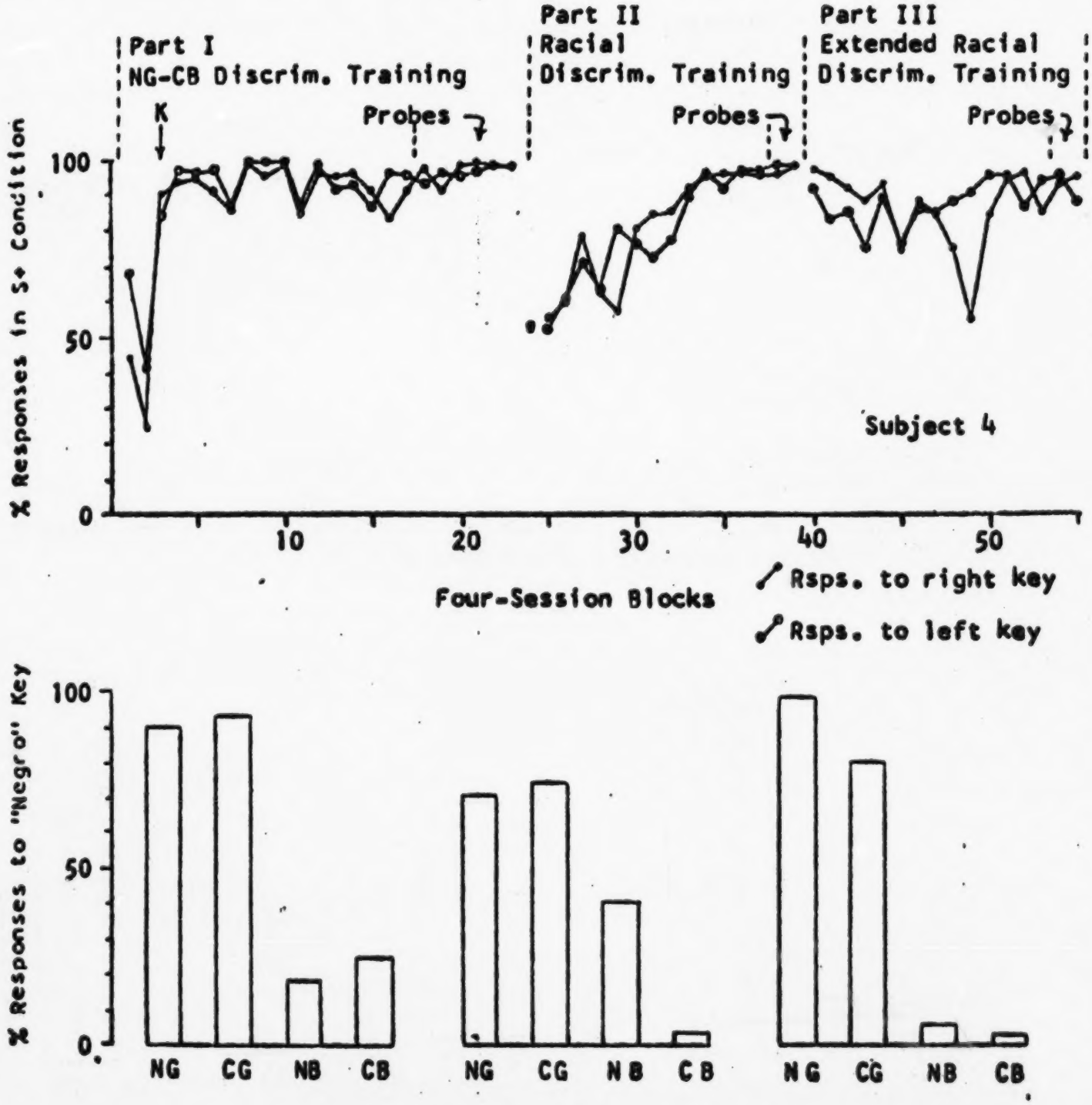

Part I
NG-CG
Discrim. Training
K
Probes
Part II
Racial
Discrim.
Training
Probes
Part III
Extended
Racial Discrim.
Training
Probes
100
50
0
10
20
30
40
50
Subject 1
Four-Session Blocks
Responses to right key
Responses to left key

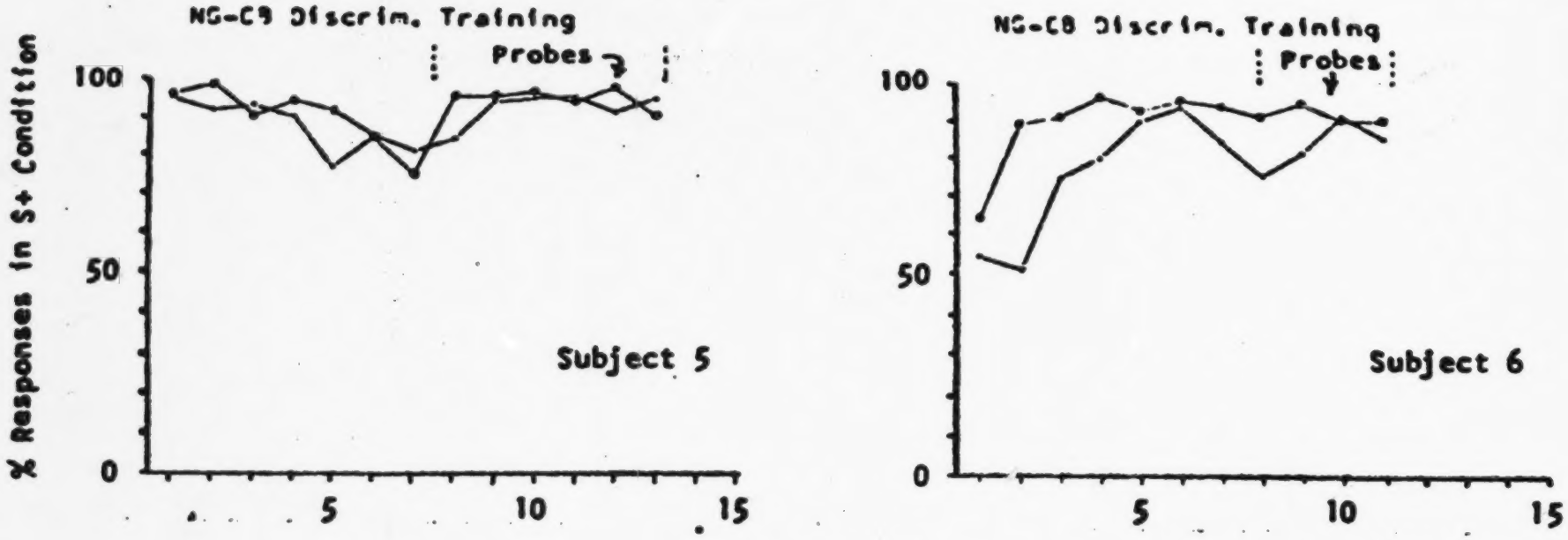

100
0
NG
CG
NB
CB
NG
CG
NB
CB
NG
CG
NB
CB
Race-Sex Groupings of Stimuli
Part I
Probes
Part II
Probes
Part III
Probes

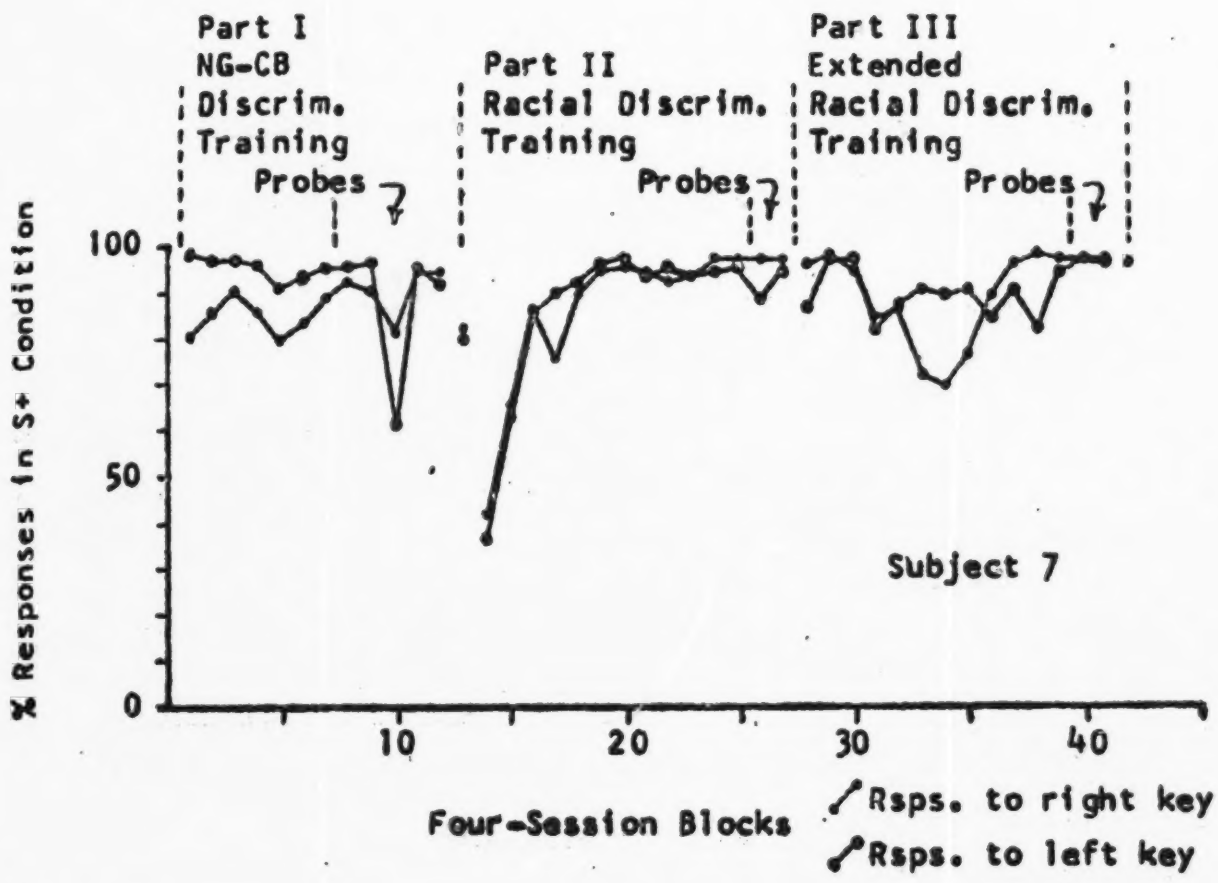

Part I
NG-CB
Discrim. Training
R
Probes
Part II
Racial
Discrim.
Training
Probes
Part III
Extended
Racial Discrim.
Training
Probes
100
50
0
10
20
30
40
50
Subject 2
Four-Session Blocks
Responses to right key
Responses to left key
100
50
0
NG
CG
NB
CB
NG
CG
NB
CB
NG
CG
NB
CB
Race-Sex Groupings of Stimuli
Part I
Probes
Part II
Probes
Part III
Probes

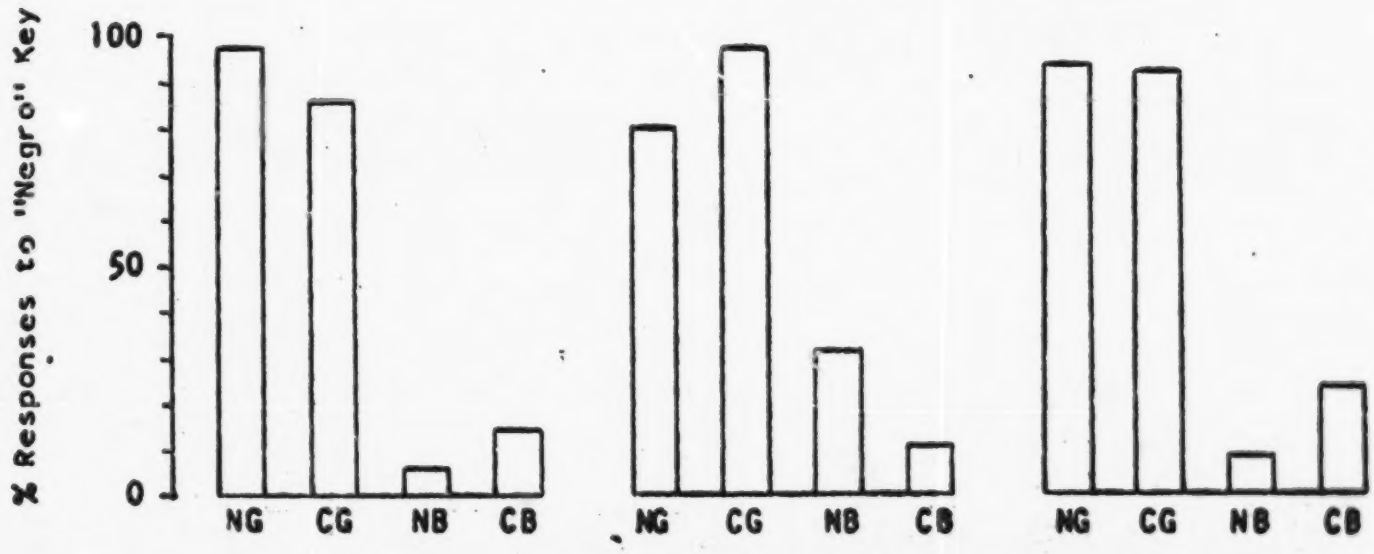

NG-CB Discrim. Training
K
Probes
100
50
0
5
10
15
20
25
Subject 3
Four-Session Blocks
Responses to right key
Responses to left key

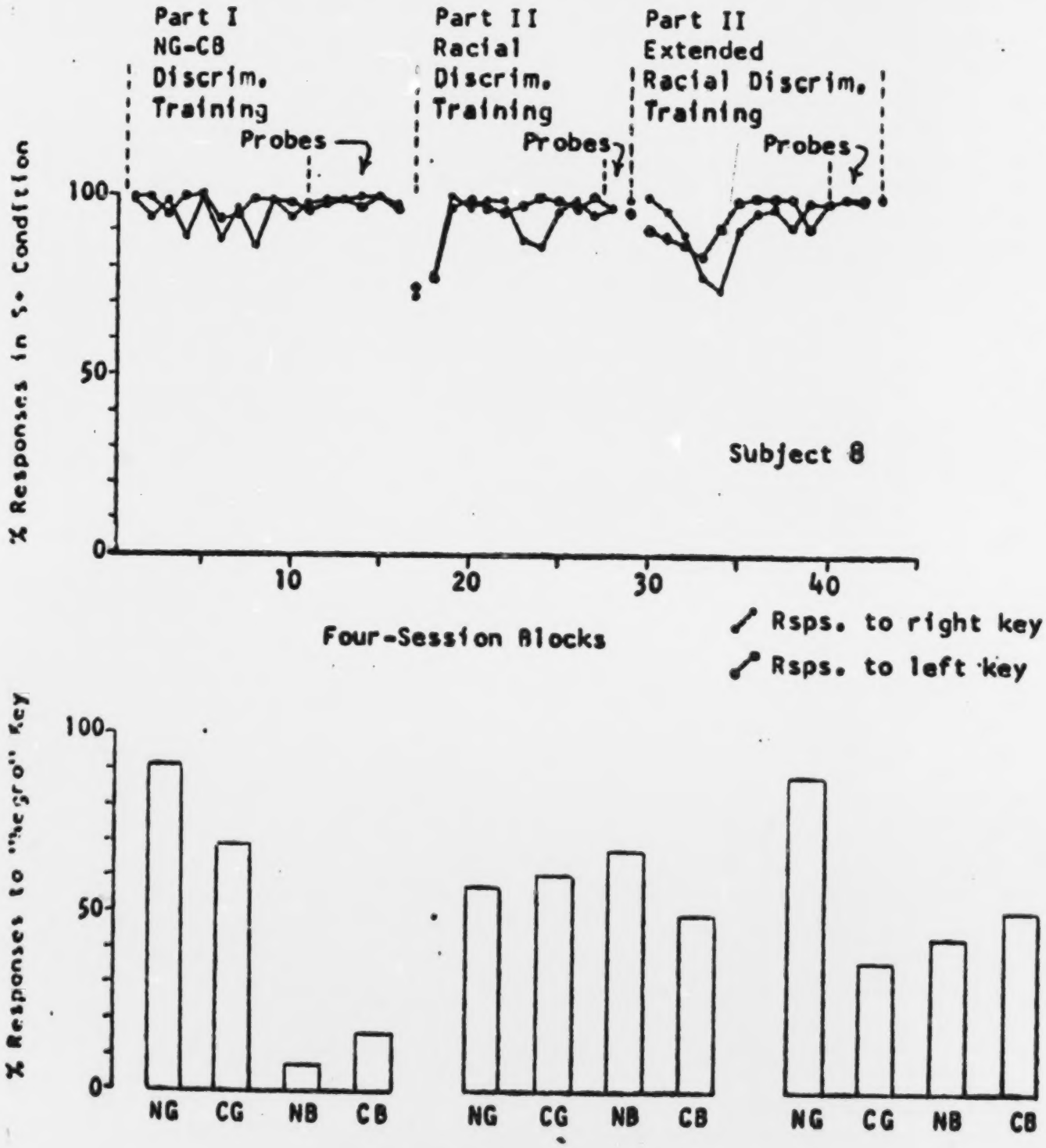

100
50
0
NG
CG
NB
CB
Race-Sex Groupings of Probe Stimuli

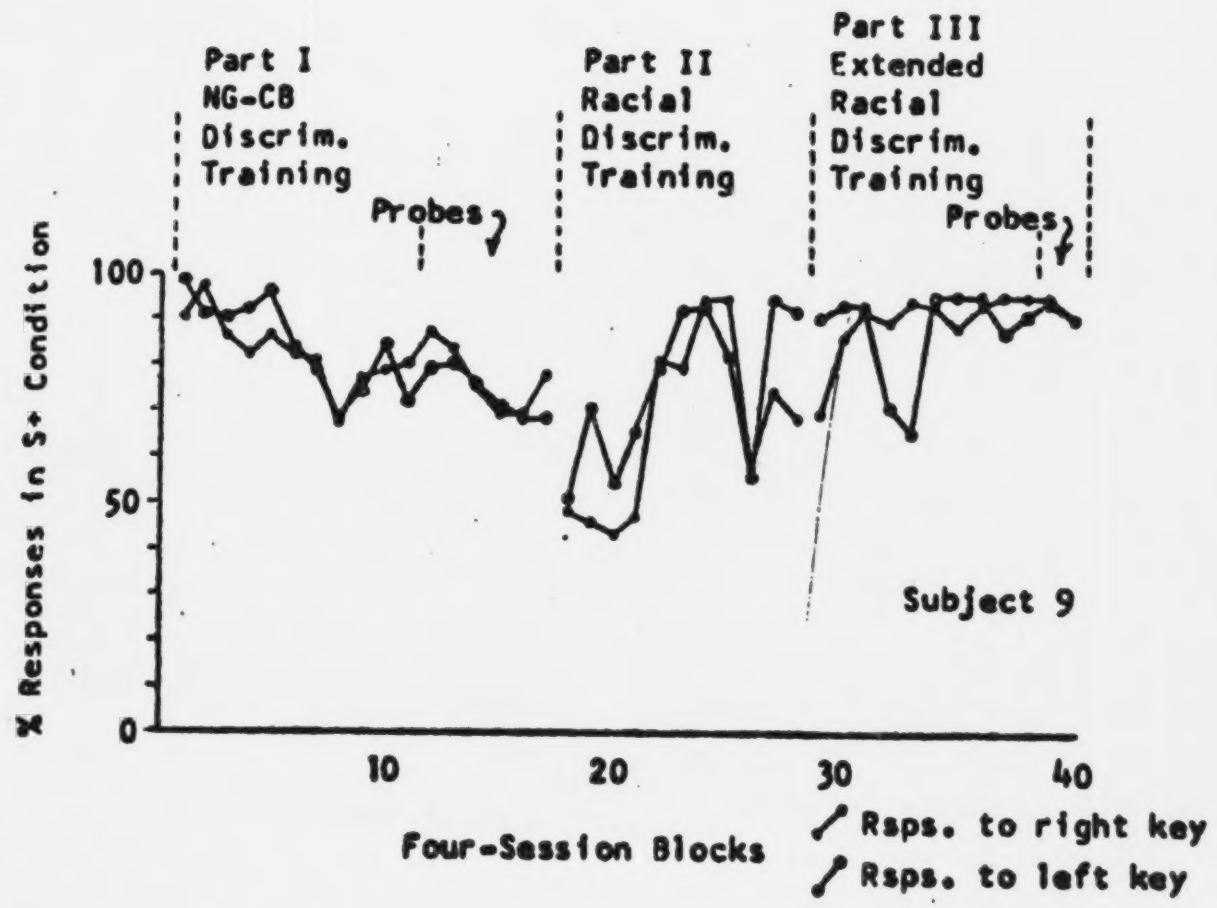

Part I
NG-CB Discrim. Training
K
Probes
Part II
Racial
Discrim. Training
Probes
Part III
Extended Racial
Discrim. Training
Probes
% Responses in S+ Condition
100
50
0
Subject 4
10
20
30
40
50
Four-Session Blocks
Rsps. to right key
Rsps. to left key
% Responses to "Negro" Key
100
50
0
NG
CG
NB
CB
NG
CG
NB
CB
NG
CG
NB
CB
Race-Sex Groupings of Stimuli
Part I
Probes
Part II
Probes
Part III
Probes

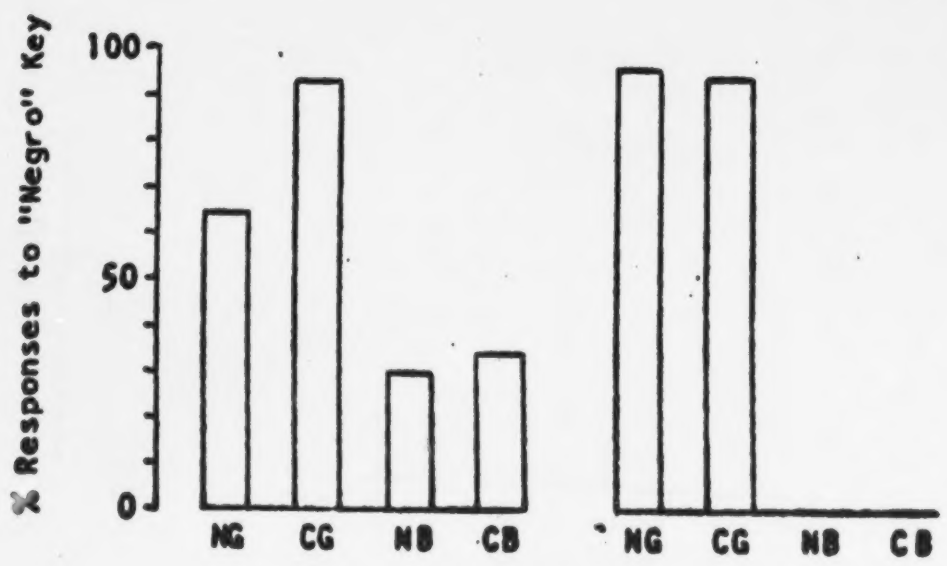

NG-C9 Discrim. Training
Probes
% Responses in S+ Condition
100
50
0
5
10
15
Subject 5
NG-C8 Discrim. Training
Probes
100
50
0
5
10
15
Subject 6
Four-Session Blocks
Responses to right key
Responses to left key
% Responses to "Negro" Key
100
50
0
NG
CG
N B
CB
100
50
0
NG
CG
NB
CB
Race-Sex Groupings of Probe Stimuli

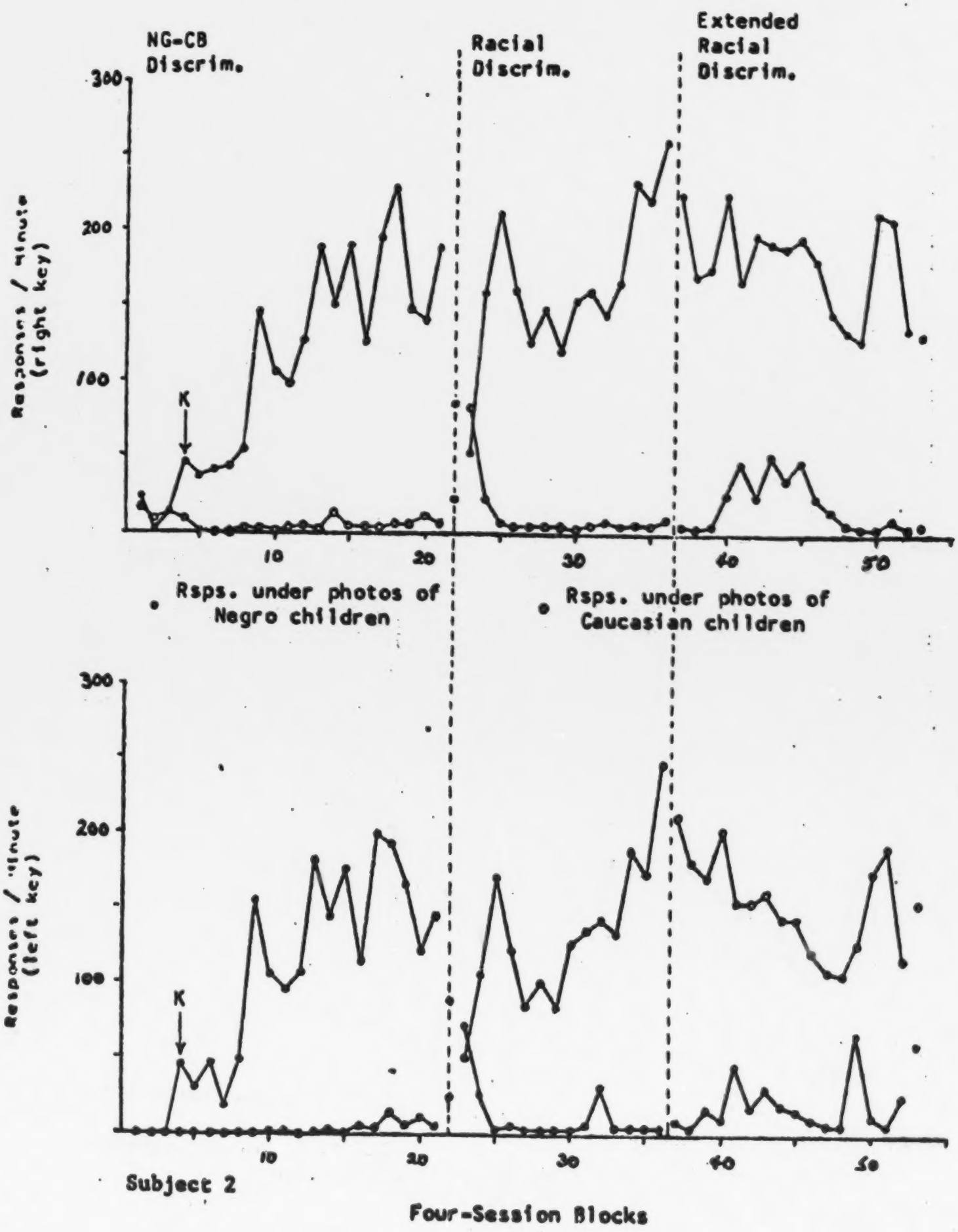

Part I
NG-CB
Discrim.
Training
Probes
Part II
Racial Discrim.
Training
Probes
Part III
Extended
Racial Discrim.
Training
Probes
% Responses in S+ Condition
100
50
0
10
20
30
40
Subject 7
Four-Session Blocks
Rsps. to right key
Rsps. to left key


% Responses to "Negro" Key
100
50
0
NG
CG
NB
CB
NG
CG
NB
CB
NG
CG
NB
CB
Race-Sex Groupings of Stimuli
Part I
Probes
Part II
Probes
Part III
Probes


Part I
NG-CB
Discrim.
Training
Probes
Part II
Racial
Discrim.
Training
Probes
Part II
Extended
Racial Discrim.
Training
Probes
% Responses in S+ Condition
100
50
0
Subject 8
10
20
30
40
Four-Session Blocks
Rsps. to right key
Rsps. to left key
% Responses to "Negro" Key
100
50
0
NG
CG
NB
CB
NG
CG
NB
CB
NG
CG
NB
CB
Race-Sex Groupings of Stimuli
Part I
Probes
Part II
Probes
Part III
Probes


Part I
NG-CB
Discrim.
Training
Probes
Part II
Racial
Discrim.
Training
Part III
Extended
Racial
Discrim.
Training
Probes
% Responses in S+ Condition
100
50
0
Subject 9
10
20
30
40
Four-Session Blocks
Rsps. to right key
Rsps. to left key


% Responses to "Negro" Key
100
50
0
NG
CG
NB
CB
NG
CG
NB
CB
Race-Sex Groupings of Stimuli
Part I
Probes
Part III
Probes


NG-CB Discrim.
Racial Discrim.
Extended Racial Discrim.
300
200
100
Responses / minute (right key)
K
10
20
30
40
50
Rsps. under photos of Negro children
Rsps. under photos of Caucasian children
300
200
100
Responses / minute (left key)
K
10
20
30
40
50
Subject 2
Four-Session Blocks

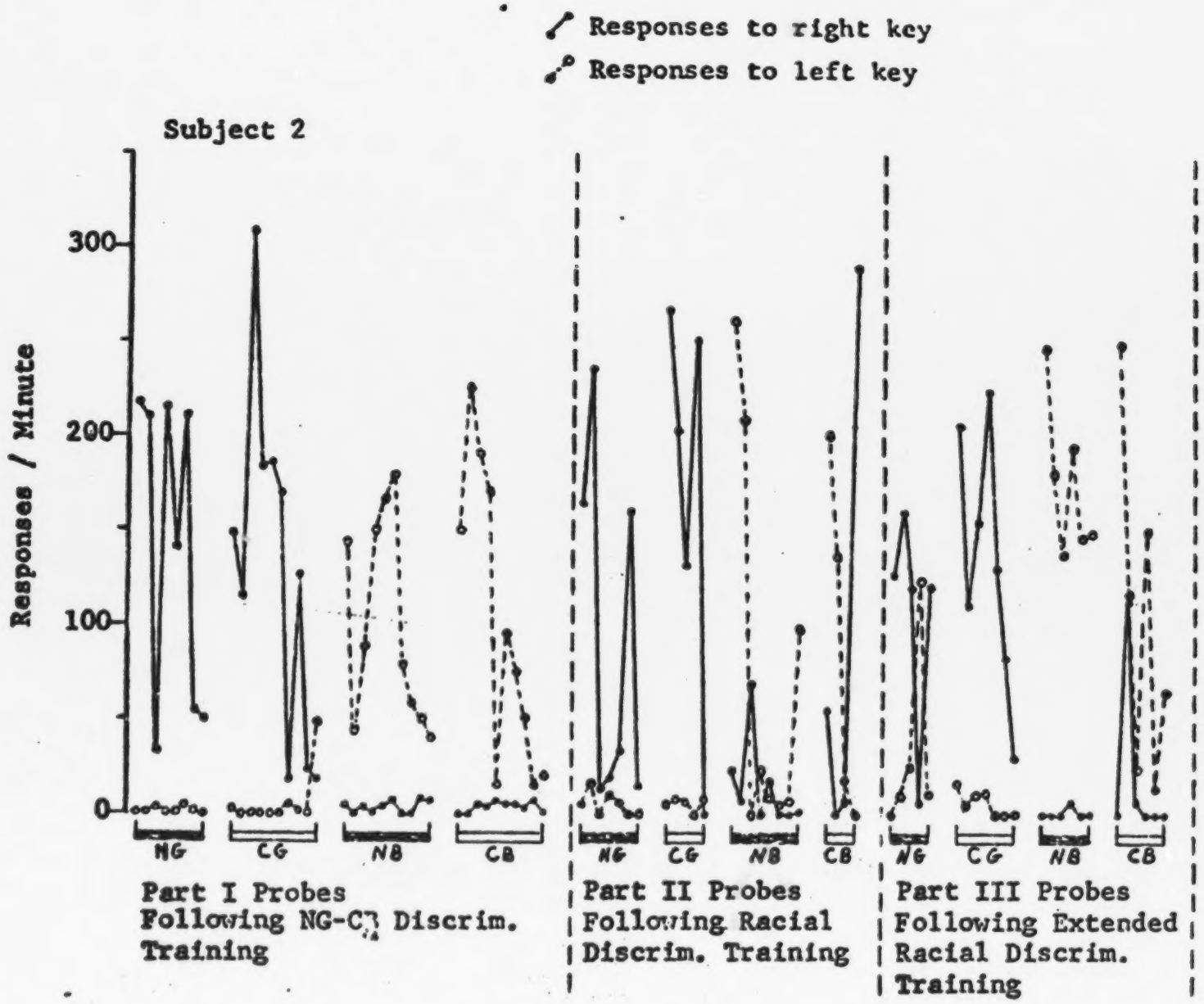
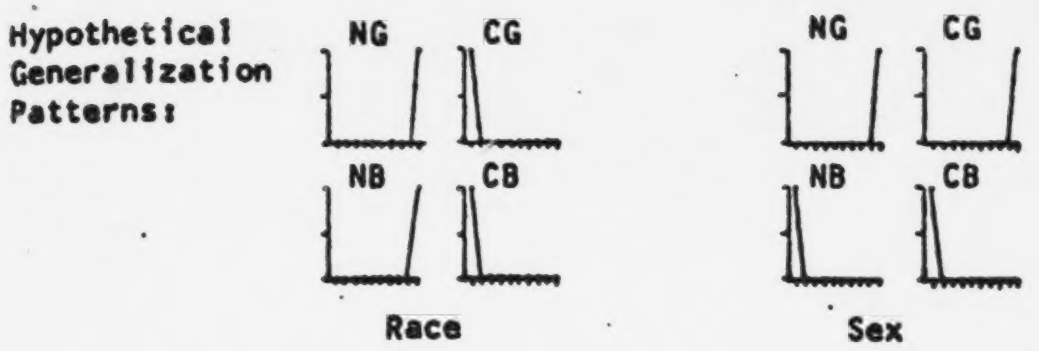
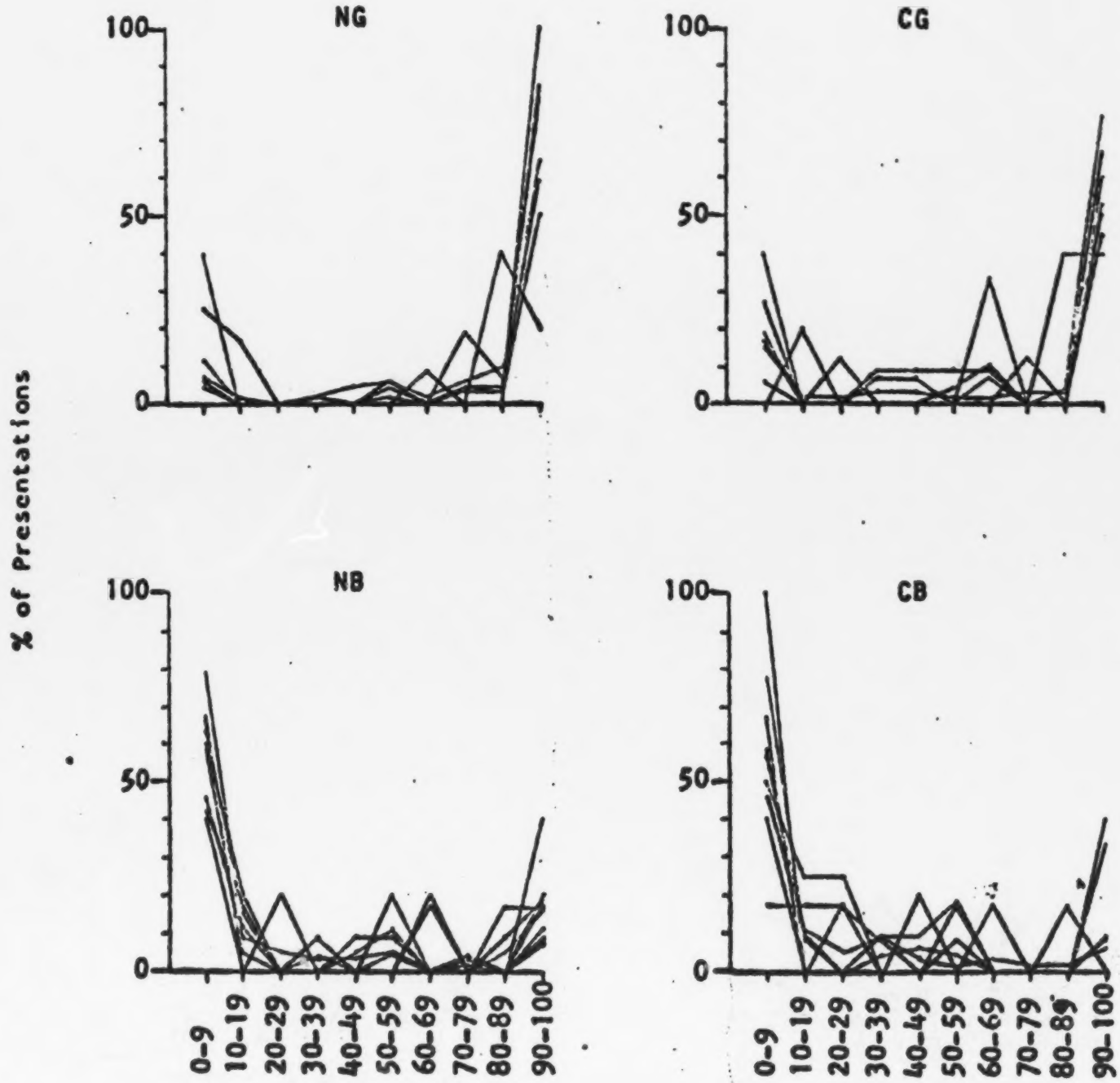

Responses to right key
Responses to left key
Subject 2
Responses / Minute
300
200
100
0
NG
CG
NB
CB
Part I Probes Following NG-CG Discrim. Training
Part II Probes Following Racial Discrim. Training
Part III Probes Following Extended Racial Discrim. Training

Figure 11


Hypothetical Generalization Patterns:
NG
CG
NB
CB
Race
NG
CG
NB
CB
Sex


NG
CG
NB
CB
100
50
0
% of Presentations
0-9
10-19
20-29
30-39
40-49
50-59
60-69
70-79
80-89
90-100
% of Responses to "Negro" Key
(Intervals of 10)

Part IV: Analysis of Some Vocal Verbal Variables